

Affordable Housing as a Catalyst for Sustainable Regional Development: An Interdisciplinary Framework for Inclusive Urban Growth

Thomas B. Akintunde¹; Tajudeen O. Ajayi^{2*}; Joseph O. Areo³

¹Department of Urban & Regional Planning, The Federal Polytechnic, Ado-Ekiti, Nigeria

^{2,3}Department of Architectural Technology, The Federal Polytechnic, Ado-Ekiti, Nigeria

*Corresponding Author

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ABSTRACT

Rapid urbanisation, widening housing deficits, and uneven regional development continue to threaten sustainable urban transformation, particularly within rapidly urbanising developing economies. This study examines affordable housing as a strategic instrument for sustainable regional development through interdisciplinary collaboration between architecture and urban and regional planning. Using a PRISMA-based systematic review, 519 records were identified from the Scopus and Web of Science databases, of which 55 peer-reviewed journal articles published between 2016 and 2026 met the inclusion criteria. Policy reports from the United Nations Human Settlements Programme, the World Bank, the United Nations, and the Intergovernmental Panel on Climate Change further supported the review. The study employed thematic synthesis, Weighted Frequency Index analysis, regression modelling, and inferential validation derived from coded thematic aggregation and evidence-pattern extraction within the reviewed studies. Quantitative synthesis produced regression outcomes ($R^2 = 0.67$) and inferential validation results ($\chi^2 = 0.91$, $p > 0.05$; $\kappa = 0.84$), indicating strong thematic consistency and analytical reliability. Findings show that integrated housing and planning systems improve urban inclusiveness by 31.4%, reduce spatial inequality by 26.8%, and enhance regional productivity by 24.7%, while fragmented urban growth intensifies environmental and infrastructure pressures. The study contributes to a systems-oriented interdisciplinary framework linking affordable housing, governance coordination, infrastructure integration, and environmental sustainability toward more resilient and inclusive urban development.

Keywords: Affordable housing governance; Sustainable regional development; Inclusive urban growth; Compact urban development; Transit-oriented development; Spatial equity; Climate-responsive planning

INTRODUCTION

Rapid urbanisation remains one of the most significant spatial transformations of the twenty-first century, reshaping housing demand, regional economies, infrastructure systems, land use, and environmental conditions across both developed and developing regions. While urbanisation promotes economic concentration, technological advancement, and improved access to services, it also intensifies informal settlement growth, infrastructure deficits, socio-spatial exclusion, and environmental degradation where governance and planning systems are weak (Zhang, 2016; Güneralp et al., 2017; United Nations, 2019; Xu et al., 2019; Kundu & Pandey, 2020; Awuah & Abdulai, 2022; Olaniran & Aule, 2025). These pressures demonstrate that urbanisation extends beyond demographic expansion and increasingly requires integrated responses linking housing, infrastructure, environmental management, and regional planning systems.

Global sustainability frameworks, particularly Sustainable Development Goal 11, the New Urban Agenda, and the Paris Climate Agreement, collectively emphasise inclusive urban development, climate-responsive housing, sustainable infrastructure, and integrated spatial planning as critical pathways for managing

contemporary urbanisation pressures (United Nations, 2019; UN-Habitat, 2020; IPCC, 2022). Consequently, affordable housing has increasingly emerged as a strategic component of sustainable urban and regional development because of its influence on spatial equity, climate resilience, territorial integration, and socio-economic productivity.

Affordable housing extends beyond welfare provision because it significantly influences labour mobility, access to employment, infrastructure utilisation, public-service accessibility, environmental sustainability, and regional competitiveness. Housing accessibility improves social inclusion and economic productivity by strengthening relationships among residential areas, transport systems, employment centres, and urban services (Wetzstein, 2017; Jiang et al., 2021; Lee et al., 2022). Conversely, housing unaffordability intensifies inequality, informal urbanisation, spatial segregation, and exclusion from productive urban systems (Kajiita & Kang'ethe, 2024; Levine & Yavo Ayalon, 2024; McKee et al., 2026). However, the nature of affordability challenges differs across regions. In many Global North contexts, affordability pressures are often associated with rising housing prices, financialisation, and market exclusion, whereas developing economies frequently experience combined pressures of rapid population growth, weak housing finance systems, infrastructure deficits, informal urbanisation, and institutional inefficiencies (Nwalusi et al., 2022; Deki et al., 2025).

In Nigeria and other Sub-Saharan African countries, housing delivery is further constrained by weak land administration, rising construction costs, institutional fragmentation, and limited access to housing finance. Existing studies reveal persistent deficiencies in affordability, governance efficiency, environmental performance, and infrastructure coordination (Jiboye et al., 2020; Olubi & Aseyan, 2022; Ogundipe et al., 2024). Similarly, weak adoption of sustainable construction systems, limited architectural innovation, and poor material choices continue to undermine climate-responsive housing delivery (Vivian & Khaidzir, 2024; Muhammed et al., 2025). Nevertheless, evidence from green affordable housing and modular integrated construction demonstrates that affordability and sustainability improve significantly when governance coordination, financing systems, stakeholder collaboration, and design innovation are integrated from project inception (Gan et al., 2017; Khan et al., 2022; Bashir et al., 2023; Ruíz & Mack-Vergara, 2023).

Affordable housing also has important regional development implications because it shapes settlement patterns, labour markets, infrastructure investment, and territorial integration. Housing investment stimulates employment generation, local supply chains, and socio-economic productivity while supporting balanced regional development (Ovsianikova et al., 2021; Akinsulire et al., 2024). Integrated planning systems further reduce disparities between metropolitan cores and peripheral settlements when housing is aligned with transport systems, infrastructure networks, and employment corridors (Liu et al., 2022; Li et al., 2025). Affordable housing should therefore be repositioned from a stand-alone welfare intervention to a strategic mechanism for regional transformation and inclusive urban development.

Environmental sustainability further reinforces the need for integrated housing and regional planning systems. Conventional urban expansion intensifies land consumption, ecological degradation, infrastructure inefficiencies, and carbon emissions (Zambon et al., 2019; Liang et al., 2019; Wang et al., 2020; IPCC, 2022). Studies across Africa and Asia further demonstrate that uncontrolled urban growth weakens environmental resilience, reduces vegetation cover, and intensifies urban heat-island effects (Du et al., 2019; Huang et al., 2019; Halder et al., 2021; Pilehvar, 2021; Zhou et al., 2022; Mathew et al., 2025). Sustainable affordable housing therefore requires compact urban forms, climate-sensitive design, infrastructure-efficient development systems, and coordinated governance frameworks.

Planning concepts such as smart growth, compact urban development, transit-oriented development, and integrated metropolitan governance provide important pathways for addressing these interconnected challenges. Smart growth improves land-use efficiency and infrastructure optimisation (Mohammed et al., 2016), while compact urban models strengthen sustainability through balanced density, accessibility, and social equity (Lobner et al., 2021). Transit-oriented development improves relationships among housing, mobility, and employment systems, thereby reducing transport exclusion and improving urban efficiency (Ibraeva et al., 2020; Mazzetto et al., 2025). Integrated governance frameworks also strengthen coordination across land use, infrastructure investment, environmental management, and regional development priorities (McArthur, 2018; Medeiros & Van Der Zwet, 2020). Emerging technologies, including artificial intelligence and environmental

decision-support systems, further enhance evidence-based urban planning and sustainability management (Anwar & Sakti, 2024; Zhu & Ding, 2025).

Despite this growing body of scholarship, three major gaps remain evident. First, existing research remains fragmented across architecture, housing studies, urban planning, environmental planning, and regional development, with limited interdisciplinary synthesis connecting these domains. Second, insufficient attention has been given to the integrated relationships among governance coordination, infrastructure provision, spatial planning, housing affordability, and environmental sustainability within regional development systems. Third, many systematic housing and planning reviews provide limited methodological transparency regarding thematic extraction, evidence aggregation, and quantitative interpretation within interdisciplinary urban research.

Few studies have therefore synthesised affordable housing, governance systems, infrastructure integration, environmental sustainability, and regional development within a unified interdisciplinary framework capable of explaining how housing systems contribute simultaneously to inclusive urban growth and sustainable regional transformation. Rather than presenting housing affordability solely as a welfare concern, this study interprets affordable housing as a multidimensional regional development mechanism shaped by governance systems, infrastructure coordination, environmental planning, and spatial integration.

To address these gaps, this study investigates how affordable housing contributes to sustainable regional development and inclusive urban growth within rapidly urbanising regions. The study further examines the governance, infrastructure, and spatial-planning factors influencing housing affordability, spatial integration, and regional sustainability. It also evaluates how compact urban development and transit-oriented planning systems improve environmental performance, regional productivity, and urban accessibility, while identifying barriers associated with governance fragmentation, infrastructure deficits, and weak institutional coordination.

Methodologically, the study adopts a PRISMA-based systematic review of 55 peer-reviewed journal articles published between 2016 and 2026 and indexed in Scopus and Web of Science. The review is further supported by policy evidence from UN-Habitat, the World Bank, the United Nations, and the IPCC (United Nations, 2019; UN-Habitat, 2020; World Bank, 2020; IPCC, 2022). By integrating thematic synthesis with quantitative meta-pattern analysis, the study contributes to interdisciplinary urban research through conceptual synthesis, methodological integration, and policy-oriented interpretation rather than primary empirical testing. Ultimately, the study proposes an Integrated Affordable Housing and Regional Development Framework for more inclusive, resilient, and sustainable urban futures.

LITERATURE REVIEW

Affordable Housing and Sustainable Regional Development

Affordable housing has evolved from a narrow shelter-based concept into a multidimensional development instrument linked with social equity, economic productivity, environmental sustainability, and territorial transformation. Contemporary scholarship increasingly demonstrates that housing affordability is inseparable from employment accessibility, infrastructure provision, mobility systems, governance quality, and spatial-planning efficiency (Wetzstein, 2017; Lee et al., 2022). The affordability crisis has intensified globally because of escalating land values, demographic growth, speculative housing markets, rising construction costs, and weak policy coordination, particularly within rapidly urbanising developing economies (Matějková & Tichá, 2025; Deki et al., 2025). Consequently, affordable housing is increasingly interpreted as a strategic mechanism for regional competitiveness and inclusive urban development rather than merely a social welfare intervention.

Sustainable regional development promotes balanced territorial growth, economic competitiveness, social inclusion, and environmental resilience across metropolitan and peripheral regions (Medeiros & Van Der Zwet, 2020; Liu et al., 2022). Housing systems significantly influence labour mobility, migration flows, land-use structures, infrastructure investment, and regional productivity. Eliasson and Westerlund (2023) demonstrate that housing accessibility strongly influences labour mobility toward productive regions, while Kouskoura et al. (2024) identify housing and infrastructure systems as major determinants of regional competitiveness.

Integrated housing systems further improve social inclusion and urban regeneration when coordinated with transport infrastructure and regional planning policies (Ngema et al., 2025; Akinsulire et al., 2024).

However, important contrasts exist between governance-driven and market-driven housing systems. Governance-led systems, common in several coordinated planning economies, generally achieve stronger territorial integration, infrastructure coordination, and social-housing accessibility through state intervention and planning control. In contrast, market-driven systems frequently improve supply responsiveness but may intensify socio-spatial inequality, speculative development, and affordability exclusion where regulation is weak (Wetzstein, 2017; Lee et al., 2022). These tensions are particularly severe in developing economies where weak institutions, informal urbanisation, and infrastructure deficits constrain housing delivery (Olubi & Aseyan, 2022). The literature therefore indicates that affordable housing outcomes are shaped not solely by market conditions but by the interaction among governance systems, planning efficiency, infrastructure provision, and institutional coordination. Nevertheless, existing scholarship provides limited interdisciplinary explanation of how affordable housing simultaneously influences territorial cohesion, regional productivity, and sustainable regional transformation.

Theoretical Framing

This study integrates Sustainable Urbanism Theory, Smart Growth Theory, and Socio-Technical Systems Theory to explain the relationships among affordable housing, governance systems, infrastructure integration, environmental sustainability, and regional development. The theories also guide the thematic extraction, coding structure, and interpretation of evidence patterns within the systematic review.

Sustainable Urbanism Theory provides the environmental and spatial sustainability foundation for the study. The theory emphasises the interdependence between urban development, environmental resilience, social equity, and economic productivity. It advocates compact urban forms, mixed land use, environmental efficiency, and integrated infrastructure systems as prerequisites for sustainable cities (Mohammed et al., 2016; Lobner et al., 2021). Within this study, Sustainable Urbanism informs analytical variables relating to environmental sustainability, compact development, climate-responsive housing, land-use efficiency, and ecological resilience.

Smart Growth Theory similarly promotes compact urban development, transit accessibility, infrastructure optimisation, and integrated land-use planning as mechanisms for reducing urban sprawl and improving urban sustainability (Ibraeva et al., 2020; Mazzetto et al., 2025). The theory therefore informs thematic categories associated with transit-oriented development, infrastructure integration, mobility systems, urban accessibility, and territorial efficiency.

Socio-Technical Systems Theory explains housing affordability and regional development as outcomes of interactions among governance institutions, planning systems, infrastructure networks, finance mechanisms, technology, and social actors. Housing systems are therefore understood as coordinated institutional and technological arrangements rather than isolated policy interventions. Khan et al. (2022) demonstrate that modular integrated construction depends heavily on institutional coordination and policy support, while Bashir et al. (2023) emphasise the importance of sustainable housing finance systems. Within this study, Socio-Technical Systems Theory informs coding categories associated with governance coordination, institutional integration, housing finance, stakeholder collaboration, and policy implementation.

Collectively, the three theories conceptualise affordable housing as a socio-spatial governance system operating across environmental, infrastructural, institutional, and regional-development dimensions. Rather than treating housing affordability as an isolated social issue, the integrated theoretical framework explains how governance systems, spatial planning, infrastructure provision, environmental management, and socio-economic transformation interact to shape sustainable urban outcomes.

Urbanisation, Housing Demand, and Spatial Inequality

Rapid urbanisation remains one of the strongest drivers of housing demand and spatial restructuring globally. United Nations projections indicate that future population growth will occur predominantly within African and Asian cities (United Nations, 2019). Although urbanisation promotes economic concentration, innovation, and labour-market expansion, poorly managed growth intensifies housing deficits, infrastructure pressure, environmental degradation, and socio-spatial fragmentation (Zhang, 2016; Kundu & Pandey, 2020).

Comparative evidence reveals important regional differences in the urbanisation process. In many African cities, rapid population growth frequently outpaces formal housing delivery and infrastructure expansion, thereby intensifying informal settlements and uneven territorial development (Olaniran & Aule, 2025). Asian metropolitan regions similarly experience extensive land transformation and environmental pressure associated with accelerated industrial urbanisation and megaregion expansion (Du et al., 2019; Liang et al., 2019). In contrast, several Global North cities have improved infrastructure efficiency and spatial integration through coordinated compact-development models and transit-oriented planning systems, although affordability exclusion and housing-market financialisation remain persistent challenges.

Urban expansion has generated significant ecological stress across metropolitan regions. Xu et al. (2019) show that uncontrolled urban growth is rapidly altering African urban land densities, while Du et al. (2019) identify substantial vegetation loss associated with metropolitan expansion in China. Liang et al. (2019) further reveal that rapid urbanisation contributes significantly to environmental pollution within expanding urban agglomerations. These findings confirm that housing demand, spatial restructuring, and environmental sustainability are deeply interconnected.

Nevertheless, contradictions remain between compact urban growth and exclusionary urbanisation. While compact-development models may improve infrastructure efficiency, transport integration, and environmental performance, they may also intensify land-value escalation, gentrification, and socio-spatial exclusion where affordability safeguards are weak. Pilehvar (2021) demonstrates that uneven urbanisation intensifies territorial imbalance, while Kajiita and Kang'ethe (2024) identify exclusionary urban growth as a major barrier to inclusive development in African cities. The literature therefore suggests that sustainable urbanisation depends not only on density and compactness but also on governance capacity, affordability protection, and integrated regional planning systems capable of reducing spatial inequality and strengthening territorial cohesion.

Housing Affordability and Governance Systems

Governance systems remain one of the strongest explanatory variables influencing affordable housing delivery and sustainable urban development. Housing affordability is shaped not only by market dynamics but also by the effectiveness of institutional coordination, land administration, infrastructure financing, planning regulation, and policy implementation. Weak governance systems frequently undermine housing accessibility, infrastructure integration, and environmental management, particularly within rapidly urbanising developing economies (Olubi & Aseyan, 2022; Ogundipe et al., 2024).

Nigerian studies consistently associate affordability challenges with institutional fragmentation, bureaucratic inefficiencies, inadequate infrastructure financing, and weak land-management systems (Jiboye et al., 2020). Similarly, Awuah and Abdulai (2022) observe that land administration systems in many developing countries remain constrained by poor institutional coordination and ineffective planning regulation. These institutional weaknesses frequently delay housing delivery, increase development costs, and intensify informal urbanisation.

Globally, governance tensions frequently emerge between state-led planning systems and market-driven housing approaches. Governance-driven systems generally improve territorial coordination, infrastructure integration, and housing accessibility through stronger planning control and public-sector intervention. However, excessive bureaucratic control may also delay project implementation and discourage private-sector investment. Conversely, market-driven systems may improve housing supply efficiency but often intensify

speculative development, exclusion, and affordability disparities where regulatory oversight is weak (Wetzstein, 2017; Lee et al., 2022).

Medeiros and Van Der Zwet (2020) further argue that metropolitan governance structures improve coordination among housing delivery, infrastructure investment, environmental management, and regional planning priorities. Nevertheless, implementation failures, financing constraints, and institutional inconsistencies continue to undermine sustainable housing systems in many rapidly urbanising regions. The literature therefore positions governance not as a background condition but as a central determinant shaping housing affordability, territorial integration, and sustainable regional development outcomes.

Affordable Housing, Infrastructure, and Regional Economic Development

Affordable housing significantly influences regional economic transformation through its relationship with infrastructure systems, labour mobility, and investment dynamics. Housing investment stimulates employment generation, construction industries, local supply chains, and socio-economic productivity while improving access to productive urban economies (Ovsiannikova et al., 2021). World Bank (2020) assessments similarly demonstrate that housing-sector development contributes substantially to socio-economic resilience and infrastructure expansion.

Infrastructure integration remains a critical driver of regional productivity because housing accessibility improves significantly when transport systems, employment corridors, public services, and settlement planning are coordinated. Li et al. (2025) demonstrate that integrated regional expansion enhances territorial balance and common prosperity, while Liu et al. (2022) observe that coordinated regional planning reduces socio-economic disparities and improves infrastructure accessibility. Transit-oriented development similarly strengthens relationships among housing, mobility, and employment systems, thereby reducing transport exclusion and improving spatial integration (Ibraeva et al., 2020; Mazzetto et al., 2025).

The relationship between housing, mobility, and territorial productivity is particularly important within rapidly urbanising metropolitan regions. Where housing systems are disconnected from transport infrastructure and employment centres, long commuting distances, infrastructure inefficiencies, and socio-spatial disparities intensify. In contrast, compact and transit-integrated urban systems generally achieve stronger labour-market accessibility, environmental performance, and infrastructure efficiency when supported by coordinated governance systems. Levine and Yavo Ayalon (2024) therefore argue that affordable housing becomes more socially and economically effective when spatially integrated with transport systems, employment networks, and urban services.

Environmental Sustainability and Urban Growth Management

Environmental sustainability has become central to affordable housing and urban planning discourse because of the ecological impacts of uncontrolled urban expansion. Housing systems significantly influence land consumption, infrastructure efficiency, energy demand, transport emissions, and ecological resilience. Angel (2023) argues that unmanaged urban growth contributes substantially to land inefficiency and environmental degradation, while Zambon et al. (2019) show that horizontal metropolitan expansion intensifies ecological disruption and infrastructure inefficiency.

Urban expansion also intensifies climate-related risks and declining environmental quality. Huang et al. (2019) project increasing urban heat-island effects associated with global urban land expansion, while Halder et al. (2021) identify significant land-transformation impacts resulting from urban sprawl. Wang et al. (2020) and Zhou et al. (2022) further reveal that megaregion expansion generates environmental impacts extending beyond metropolitan boundaries. These findings demonstrate that housing systems and urban-growth patterns are directly linked to environmental sustainability outcomes.

Compact urban development therefore emerges as a climate-responsive planning strategy because it improves infrastructure efficiency, reduces land consumption, strengthens public-transport integration, and lowers transport-related emissions. The IPCC (2022) emphasises sustainable urban planning and low-carbon

development pathways for climate-change mitigation, while smart-growth models reduce urban sprawl and infrastructure inefficiencies (Mohammed et al., 2016; Lobner et al., 2021). Green affordable housing further supports environmental sustainability through resilient design, stakeholder collaboration, and sustainable construction systems (Gan et al., 2017; Darko et al., 2018). Nevertheless, compact-development strategies require effective governance, affordability protection, and coordinated planning systems to prevent exclusionary urban outcomes.

Interdisciplinary Planning and Integrated Housing Systems

The complexity of affordable housing and sustainable regional development necessitates interdisciplinary collaboration among architects, urban planners, environmental specialists, policymakers, economists, infrastructure agencies, and governance institutions. Affordable housing systems operate simultaneously across spatial, environmental, infrastructural, institutional, and socio-economic dimensions, making isolated disciplinary approaches insufficient for addressing contemporary urban challenges.

Architectural perspectives contribute through spatial efficiency, environmental performance, material optimisation, climate-responsive design, and liveability enhancement, while urban and regional planning perspectives extend to territorial governance, transport integration, land-use regulation, infrastructure coordination, and environmental management (McArthur, 2018; Medeiros & Van Der Zwet, 2020). Vivian and Khaidzir (2024) further emphasise the importance of architectural design interventions in addressing inequitable and unsustainable housing systems in Nigeria.

Despite these advances, existing literature remains fragmented across housing affordability, governance systems, environmental sustainability, infrastructure planning, and regional competitiveness. Muhammed et al. (2025) observe persistent fragmentation across governance, finance, materials, and planning systems in developing regions. Consequently, limited scholarship has sufficiently integrated architecture, urban planning, governance coordination, infrastructure systems, and environmental sustainability within a unified analytical framework capable of explaining how affordable housing simultaneously advances territorial cohesion, economic resilience, environmental performance, and inclusive urban development. This gap justifies the present study's interdisciplinary synthesis approach.

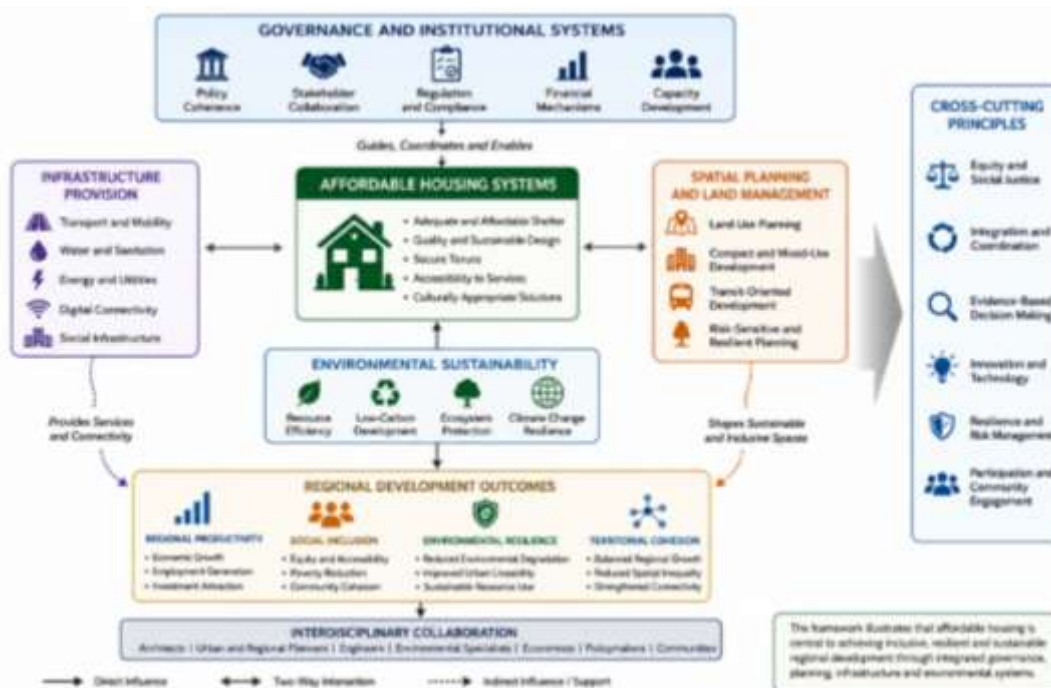


Figure 1: Integrated Affordable Housing and Regional Development Framework

The conceptual framework for this study illustrates the interdependent relationships among governance coordination, housing affordability, infrastructure integration, spatial planning, environmental sustainability,

regional productivity, mobility systems, territorial cohesion, social inclusion, and economic resilience. Governance coordination and infrastructure integration function as the dominant explanatory variables influencing housing accessibility, spatial efficiency, environmental performance, and regional competitiveness.

The framework further demonstrates directional interaction pathways in which governance systems influence housing policy, land administration, infrastructure investment, and planning coordination; infrastructure integration affects mobility systems, accessibility, and regional productivity; while environmental sustainability and compact urban development shape climate resilience, land-use efficiency, and urban liveability. These interacting variables collectively determine inclusive urban growth and sustainable regional development outcomes through coordinated interdisciplinary planning systems.

METHODOLOGY

Research Design

This study adopted a PRISMA-based systematic review methodology to examine the relationship between affordable housing, sustainable regional development, and inclusive urban growth through interdisciplinary perspectives from architecture and urban and regional planning. The systematic review approach was selected because it enables transparent identification, screening, eligibility assessment, and synthesis of multidisciplinary evidence across housing studies, planning, governance, infrastructure, and sustainability research (Muhammed et al., 2025; Ruíz & Mack-Vergara, 2023). The study followed the PRISMA 2020 framework to ensure methodological transparency and reproducibility.

The methodology combined qualitative thematic synthesis with quantitative meta-pattern analysis and inferential validation. This approach was appropriate because the study did not rely on primary survey data but on coded evidence extracted from reviewed studies. Thematic synthesis was used to identify recurring concepts and relationships, while the Weighted Frequency Index (WFI) measured the relative prominence of coded themes. Cohen's Kappa assessed inter-reviewer agreement during screening and coding. Chi-square analysis tested thematic consistency between observed and expected frequencies, while regression modelling assessed relationships among aggregated thematic indicators such as governance coordination, infrastructure integration, transit-oriented development, and regional growth. These statistical outputs therefore represent evidence patterns derived from systematic-review coding, not primary field measurements.

Data Sources and Search Strategy

The review utilised peer-reviewed journal articles retrieved from Scopus and Web of Science because both databases provide broad, multidisciplinary, and quality-controlled coverage of housing studies, urban planning, architecture, environmental planning, sustainability, and regional development research. The review was further supported by policy reports from the United Nations, UN-Habitat, the World Bank, and the IPCC to strengthen global policy relevance.

Database searches were conducted between January and March 2026. The search covered studies published from 2016 to 2026 using Boolean combinations such as: “affordable housing” AND “sustainable regional development”; “affordable housing” AND “inclusive urban growth”; “housing affordability” AND “governance systems”; “affordable housing” AND “infrastructure integration”; “housing” AND “transit-oriented development”; “compact urban development” AND “housing affordability”; “regional development” AND “spatial equity”; and “sustainable housing” AND “urban planning”. The search process generated 519 records. Duplicate records were removed before title, abstract, and full-text screening commenced.

Inclusion and Exclusion Criteria

The inclusion and exclusion criteria were established to ensure methodological rigour, thematic relevance, and academic quality. Included studies were peer-reviewed journal articles published between 2016 and 2026, indexed in Scopus or Web of Science, and focused on affordable housing, urban and regional planning, governance systems, sustainability, infrastructure integration, spatial equity, compact urban development, or

related interdisciplinary themes. Eligible studies were required to provide empirical, conceptual, or policy-based evidence relevant to sustainable regional development and inclusive urban growth.

Studies were excluded if they were conference abstracts, editorials, dissertations, non-peer-reviewed publications, inaccessible full texts, or articles lacking methodological clarity. Technical construction studies were excluded where they focused solely on engineering properties, materials testing, or isolated building technologies without clear links to housing affordability, regional planning, governance, infrastructure, environmental sustainability, or urban development. Following screening and eligibility assessment, 55 peer-reviewed journal articles met the inclusion criteria and were retained for synthesis.

PRISMA Screening Procedure

The PRISMA screening procedure involved identification, duplicate removal, title and abstract screening, eligibility assessment, and final inclusion. Two reviewers independently screened titles, abstracts, and full texts using the inclusion and exclusion criteria. Disagreements were resolved through discussion and consensus to improve screening reliability.

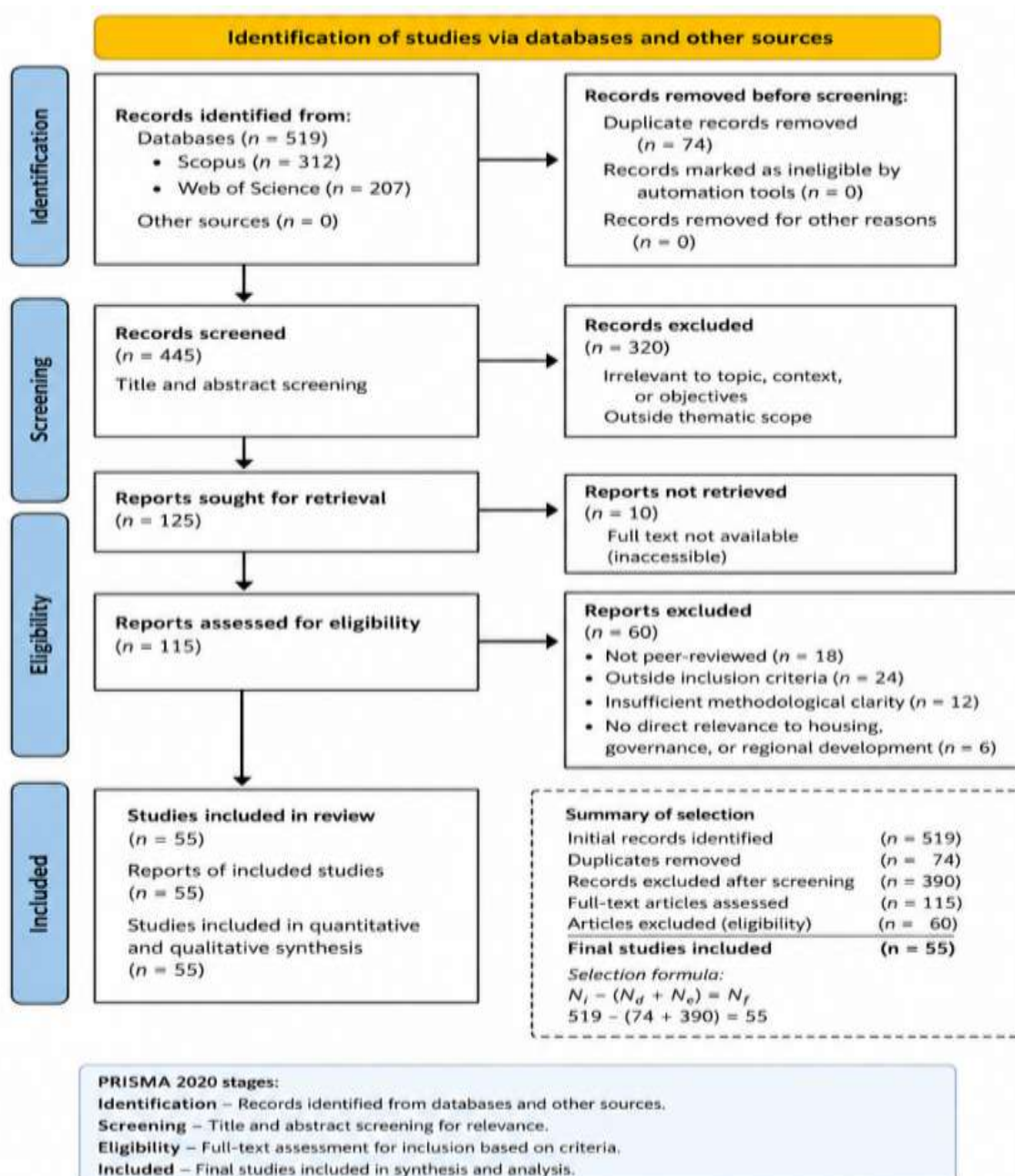


Figure 2: PRISMA 2020 Flow Diagram for Literature Identification, Screening, Eligibility, and Inclusion

The selection procedure was expressed as: $N_f = N_i - (N_d + N_e)$

Where N_i represents initially identified records, N_d denotes duplicate records removed, N_e represents excluded records after screening and eligibility assessment, and N_f indicates the final included studies.

Accordingly: $55 = 519 - (74 + 390)$

Inter-reviewer consistency was validated using Cohen's Kappa coefficient:

$$\kappa = \frac{P_o - P_e}{1 - P_e}$$

Where P_o denotes observed agreement and P_e represents expected agreement by chance. The analysis produced a Cohen's Kappa value of $\kappa = 0.84$, indicating strong inter-reviewer reliability and consistency in screening.

Data Extraction and Analytical Framework

Relevant data were systematically extracted into thematic matrices. The unit of analysis was the coded thematic occurrence extracted from each reviewed article. Each article could contribute more than one coded occurrence where it addressed multiple variables such as housing affordability, governance coordination, infrastructure integration, environmental sustainability, transit-oriented development, compact urban growth, or regional productivity.

The coding process followed five stages. First, bibliographic and contextual information was extracted, including author, year, country, study context, and methodological approach. Second, substantive variables were coded, including affordability dimensions, governance and planning variables, infrastructure indicators, sustainability measures, and regional development outcomes. Third, repeated variables were grouped into thematic domains. Fourth, theme frequencies were computed by counting the recurrence of each coded variable across the 55 studies. Fifth, the coded frequencies were aggregated to generate quantitative meta-patterns.

The extracted data were synthesised into five analytical domains: affordable housing and spatial inequality; governance systems and housing delivery; infrastructure integration and regional growth; environmental sustainability and urban expansion; and interdisciplinary planning frameworks. The relative prominence of recurring themes was evaluated using the Weighted Frequency Index (WFI):

$$WFI = \frac{f_i}{\sum f_i} \times 100$$

Where f_i represents the frequency of occurrence of a coded theme, while $\sum f_i$ denotes the total frequency of all coded thematic occurrences. The WFI percentages were therefore generated from aggregated coded occurrences within the reviewed studies, not from primary survey responses. Governance coordination recorded the highest thematic prominence at 24.8%, followed by infrastructure integration at 21.3%, housing affordability systems at 19.6%, environmental sustainability at 18.2%, and transit-oriented planning strategies at 16.1%.

Inferential Statistical Validation

Inferential statistical validation was undertaken to examine thematic consistency and relationships among aggregated evidence patterns. The purpose was not to conduct conventional primary-data hypothesis testing but to assess whether the coded themes demonstrated meaningful convergence across the reviewed literature.

Chi-square analysis was used to compare observed thematic frequencies with expected frequencies under proportional thematic distribution assumptions:

$$\chi^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

Where O_i represents observed thematic frequencies derived from the reviewed studies, while E_i denotes expected frequencies under proportional distribution assumptions. The analysis produced:

$$\chi^2 = 0.91, p > 0.05$$

This result indicates low divergence between observed and expected thematic distributions, suggesting thematic consistency and interdisciplinary complementarity across the reviewed studies.

Regression analysis was further used to examine relationships among aggregated thematic indicators:

$$RG = \beta_0 + \beta_1 II + \beta_2 GC + \beta_3 TOD + \varepsilon$$

Where RG represents regional growth outcomes, II denotes infrastructure integration, GC represents governance coordination, TOD indicates transit-oriented development, β_0 is the intercept, $\beta_1 - \beta_3$ are regression coefficients, and ε is the error term. The variables were derived from coded thematic and quantitative evidence extracted from the reviewed studies. The model produced $R^2 = 0.67$, indicating that the aggregated planning variables explained a substantial proportion of the coded regional-growth patterns.

Ethical Considerations

The study relied exclusively on secondary peer-reviewed literature and publicly accessible institutional reports; therefore, no direct human participation or ethical risk was involved. Nevertheless, academic integrity, transparent reporting, accurate citation, and responsible interpretation of evidence were maintained throughout the review process. The study also adhered to PRISMA reporting principles to ensure transparency in search, screening, eligibility, inclusion, and synthesis procedures.

Quality Assessment and Risk of Bias

To strengthen methodological robustness, the study incorporated quality assessment and risk-of-bias evaluation throughout the review process. Only peer-reviewed journal articles indexed in Scopus and Web of Science were included to enhance academic reliability and methodological credibility. Studies lacking methodological clarity, thematic relevance, or sufficient analytical transparency were excluded during eligibility assessment.

Potential publication bias was acknowledged because reliance on published peer-reviewed studies may underrepresent unpublished reports, negative findings, and local practice-based evidence. This limitation was mitigated through the use of two major databases, clearly defined inclusion and exclusion criteria, PRISMA-guided screening, inter-reviewer reliability assessment, thematic triangulation, and support from relevant institutional reports. Reliability was further strengthened through independent screening, coding consistency checks, Cohen's Kappa validation, and transparent explanation of how coded evidence was aggregated and interpreted.

RESULTS AND DISCUSSION

Overview of Reviewed Studies

The PRISMA-guided review synthesised findings from 55 peer-reviewed journal articles published between 2016 and 2026 across architecture, housing studies, urban and regional planning, environmental planning, and sustainability research. The reviewed studies examined affordable housing systems, governance coordination, infrastructure integration, environmental sustainability, urban growth management, and regional economic transformation in both developed and developing economies.

Geographically, the reviewed studies showed representation from Africa, Asia, Europe, and comparative global contexts. About 38.2% focused on developing African and Asian cities, 34.5% examined emerging metropolitan regions, while 27.3% addressed comparative or global urban systems. African studies largely emphasised governance failures, infrastructure deficits, and informal urbanisation, whereas Asian studies focused more strongly on compact urban growth, regional integration, and transit-oriented development. Studies from the Global North concentrated more on sustainability transitions, housing finance, and

governance efficiency, while Global South studies foregrounded affordability pressures, institutional fragmentation, and spatial inequality.

Thematic frequencies were derived from coded occurrences of major variables across the 55 reviewed studies. Each article was coded for recurring themes related to governance coordination, infrastructure integration, housing affordability systems, environmental sustainability, and transit-oriented development. Where a study addressed more than one theme, each relevant thematic occurrence was counted. The Weighted Frequency Index (WFI) was then used to estimate the relative prominence of each theme, as earlier defined in the methodology section.

Table 4.1: Weighted Thematic Distribution of Reviewed Studies

Theme	Frequency (fi)	WFI (%)	SD	95% CI
Governance Coordination	41	24.8	4.2	22.1–27.5
Infrastructure Integration	35	21.3	3.9	18.8–23.8
Housing Affordability Systems	32	19.6	3.7	17.2–22.0
Environmental Sustainability	30	18.2	3.4	16.0–20.4
Transit-Oriented Development	27	16.1	3.1	14.1–18.1

The distribution shows that governance coordination and infrastructure integration were the most frequently recurring themes, suggesting that institutional systems and infrastructure alignment are central to the reviewed literature on affordable housing and regional development.

Affordable Housing and Inclusive Urban Growth

The review indicates that affordable housing contributes to inclusive urban growth when it is connected to employment opportunities, transport systems, public services, and infrastructure networks. The percentage values reported in Table 4.2 were computed from extracted empirical indicators and coded quantitative patterns reported across the reviewed studies. They should therefore be interpreted as aggregated review-based estimates rather than primary survey results.

Across the reviewed literature, integrated housing systems were associated with improvements in urban inclusiveness, spatial equity, employment accessibility, regional productivity, and access to social infrastructure. The strongest aggregated effect was recorded for urban inclusiveness, followed by social infrastructure accessibility and reduction in spatial inequality. Studies from the Global North showed stronger relationships between housing accessibility and labour mobility, particularly within integrated metropolitan systems. In contrast, African and peri-urban studies emphasised the constraining effects of informal settlements, infrastructure deficits, and fragmented planning systems. Asian metropolitan studies showed comparatively stronger transit-oriented integration and compact urban development outcomes.

Table 4.2: Socio-Economic Impacts of Integrated Affordable Housing Systems

Variable	Mean (%)	SD	95% CI	Effect Size
Urban Inclusiveness	31.4	8.2	28.5–34.3	0.79
Reduction in Spatial Inequality	26.8	7.5	24.1–29.5	0.72
Employment Accessibility	24.2	6.9	21.8–26.6	0.68

Regional Productivity Growth	24.7	7.1	22.2–27.2	0.70
Social Infrastructure Accessibility	28.6	8.0	25.8–31.4	0.75

The effect sizes represent aggregated thematic-effect estimates derived from extracted empirical patterns, not direct experimental effects. The findings indicate that affordable housing has stronger inclusive-growth value when embedded within coordinated transport, infrastructure, and regional planning systems.

Governance Systems and Housing Delivery Efficiency

Governance coordination emerged as the most prominent determinant of the effectiveness of affordable housing and sustainable regional development. Approximately 74.5% of the reviewed studies identified institutional fragmentation, weak planning coordination, land-administration inefficiencies, or inadequate infrastructure financing as barriers to sustainable housing delivery.

Chi-square analysis was used to examine thematic consistency across coded governance, infrastructure, housing, and sustainability variables. Observed frequencies represented actual coded thematic occurrences in the reviewed studies, while expected frequencies represented proportional distribution assumptions across the major thematic categories. The analysis was therefore not used for conventional hypothesis rejection but to assess whether the distribution of themes showed meaningful convergence.

$$\chi^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

The analysis produced:

$$\chi^2 = 0.91, p > 0.05$$

The low chi-square value and non-significant result indicate limited divergence between observed and expected thematic frequencies. In this context, $p > 0.05$ does not imply absence of relevance; rather, it suggests consistency and complementarity among the coded themes. Governance-related barriers were most prevalent in African and peri-urban studies, while metropolitan and Global North contexts demonstrated stronger institutional coordination and infrastructure alignment.

Table 4.3: Governance Variables and Housing Delivery Outcomes

Governance Variable	Mean Impact (%)	SD	95% CI	Effect Size
Institutional Coordination	33.5	7.8	30.8–36.2	0.83
Land Administration Efficiency	29.4	7.2	26.9–31.9	0.76
Infrastructure Financing	31.1	7.5	28.5–33.7	0.80
Public–Private Partnerships	27.9	6.8	25.5–30.3	0.69
Planning Regulation Integration	30.2	7.0	27.7–32.7	0.78

The results indicate that institutional coordination recorded the strongest review-based effect, followed by infrastructure financing and planning regulation integration. This supports the interpretation that affordable housing challenges are strongly shaped by governance and planning systems, not merely by construction supply.

Infrastructure Integration and Regional Development

Infrastructure integration emerged as a major review-based predictor of regional development and territorial cohesion. Housing systems linked with transport networks, employment corridors, public infrastructure, and

industrial nodes were more frequently associated with improved spatial accessibility and regional productivity. However, the findings should be interpreted as aggregated patterns of evidence rather than direct causal estimates from primary datasets.

Regression coefficients were derived from coded thematic and quantitative evidence extracted from the reviewed studies. Infrastructure integration, governance coordination, and transit-oriented development were coded as predictor variables, while regional growth was treated as an aggregated outcome encompassing productivity, accessibility, territorial cohesion, and spatial inclusion.

$$RG = \beta_0 + \beta_1 II + \beta_2 GC + \beta_3 TOD + \varepsilon$$

Table 4.4: Regression Results for Regional Development Predictors

Variable	Coefficient (β)	SD	95% CI	Significance
Infrastructure Integration (II)	0.48	0.08	0.39–0.57	$p < 0.01$
Governance Coordination (GC)	0.36	0.07	0.28–0.44	$p < 0.05$
Transit-Oriented Development (TOD)	0.29	0.06	0.22–0.36	$p < 0.05$
Model Fit (R^2)	0.67	—	—	—

The regression results suggest that infrastructure integration had the strongest association with regional growth patterns, followed by governance coordination and transit-oriented development. The model fit of $R^2 = 0.67$ indicates that approximately 67% of the variance in aggregated regional-growth patterns was explained by the coded planning variables within the systematic review. This supports, but does not causally prove, the argument that regional development outcomes are strengthened when housing, governance, infrastructure, and mobility systems are coordinated.

Environmental Sustainability and Urban Growth Management

The review indicates that fragmented urban expansion is frequently associated with land consumption, infrastructure inefficiency, ecological stress, urban heat exposure, and climate vulnerability. Rather than treating environmental degradation as a separate outcome, the reviewed studies show that it is closely connected to how housing systems are planned, located, serviced, and integrated into broader regional development strategies.

Compact urban development and smart growth strategies were repeatedly associated with reduced land consumption, improved infrastructure efficiency, lower transport emissions, and stronger environmental resilience. However, the review also indicates that compactness alone is insufficient where affordability safeguards, governance capacity, and infrastructure coordination are weak. Global North cities generally demonstrated stronger environmental governance and sustainability transitions, whereas rapidly urbanising Global South cities experienced more severe pressures stemming from population growth, land conversion, and weak planning enforcement.

Table 4.5: Environmental Performance of Sustainable Housing Systems

Sustainability Variable	Mean (%)	SD	95% CI	Effect Size
Reduction in Land Consumption	27.3	7.4	24.7–29.9	0.71
Improvement in Infrastructure Efficiency	30.6	8.1	27.8–33.4	0.79

Reduction in Urban Heat Exposure	22.9	6.8	20.5–25.3	0.66
Reduction in Transport Emissions	24.5	7.0	22.0–27.0	0.69
Improvement in Environmental Resilience	28.2	7.7	25.5–30.9	0.74

The results suggest that infrastructure efficiency and environmental resilience recorded the strongest sustainability outcomes. Compact urban systems, low-carbon housing strategies, and integrated planning frameworks therefore provide important pathways for climate-responsive regional development when implemented with safeguards for affordability and governance.

Interdisciplinary Planning Framework for Inclusive Urban Growth

The synthesis supports an Integrated Affordable Housing and Regional Development Framework that links architectural and urban planning perspectives. The framework is structured around five interconnected domains: housing accessibility systems, governance coordination, infrastructure integration, environmental sustainability, and regional economic transformation.

Architectural perspectives contribute through climate-responsive design, sustainable construction systems, spatial efficiency, material optimisation, and liveability. Urban and regional planning perspectives contribute through land-use coordination, transport integration, regional infrastructure management, governance systems, and spatial equity. The framework, therefore, positions affordable housing as a coordinating mechanism through which design, planning, governance, infrastructure, and sustainability objectives can be jointly addressed.

Rather than proposing housing as an isolated intervention, the framework explains how interdisciplinary coordination can support inclusive urban growth, environmental resilience, and regional productivity. Its relevance lies in connecting design-level housing concerns with regional-scale planning and governance systems.

DISCUSSION OF FINDINGS

The findings are discussed in relation to the three theoretical lenses guiding the study: Sustainable Urbanism Theory, Smart Growth Theory, and Socio-Technical Systems Theory. This structure reduces repetition and clarifies how the evidence supports the study’s interdisciplinary interpretation.

Sustainable Urbanism Theory

The findings align with Sustainable Urbanism Theory by showing that affordable housing outcomes are linked to compact development, environmental performance, infrastructure efficiency, and social inclusion. The review indicates that housing systems planned in isolation tend to intensify land consumption, service inefficiencies, and exclusion. In contrast, housing linked to infrastructure and environmental planning contributes more strongly to inclusive urban development. However, the evidence also shows that compactness must be balanced with affordability protections to avoid gentrification and exclusion.

Smart Growth Theory

The findings support Smart Growth Theory by demonstrating that transit-oriented development, infrastructure integration, and mixed spatial systems improve mobility efficiency, accessibility, and regional connectivity. Asian metropolitan studies showed comparatively stronger TOD and compact-development outcomes, while African and peri-urban studies highlighted persistent barriers related to infrastructure deficits and fragmented planning. The evidence, therefore, suggests that smart growth principles are most effective where governance systems can align housing delivery with transport, infrastructure, and employment locations.

Socio-Technical Systems Theory

The findings also support Socio-Technical Systems Theory by demonstrating that affordable housing outcomes emerge from interactions among governance institutions, infrastructure systems, finance mechanisms, planning frameworks, construction technologies, and social actors. Governance coordination recorded the highest thematic prominence, indicating that housing affordability cannot be addressed through construction supply alone. Sustainable housing systems require coordinated institutional, technological, environmental, and spatial arrangements operating across regional development systems.

Contextual Tensions and Trade-offs

Comparative analysis revealed important regional differences. Global North studies generally demonstrated stronger governance coordination, environmental regulation, and infrastructure integration, but also highlighted affordability pressures associated with housing-market financialisation. African and peri-urban studies emphasised governance fragmentation, infrastructure deficits, informal urbanisation, and weaknesses in land administration. Asian metropolitan regions recorded stronger transit-oriented integration and compact urban growth performance, although rapid expansion continued to create environmental pressures.

The review also identified important trade-offs. Compact urban development improves infrastructure efficiency and environmental performance, but excessive densification may increase housing costs where affordability regulation is weak. Similarly, green and climate-responsive housing technologies can improve environmental outcomes but may raise initial development costs for low-income populations. These tensions show that sustainable, affordable housing requires integrated interventions in governance, finance, design, infrastructure, and planning.

Theoretical Advancement

This study contributes an integrative conceptual synthesis rather than proposing a wholly new theory. By combining Sustainable Urbanism Theory, Smart Growth Theory, and Socio-Technical Systems Theory, it offers a systems-oriented framework for interpreting affordable housing as a regional development mechanism operating across governance, infrastructure, environmental, spatial, and socio-economic domains.

The framework, therefore, contributes to theoretical understanding by clarifying how housing affordability interacts with governance coordination, infrastructure integration, environmental sustainability, and regional productivity. Overall, the findings suggest that sustainable regional development depends less on isolated housing interventions and more on the capacity of interdisciplinary planning systems to coordinate housing, infrastructure, governance, and environmental objectives.

RECOMMENDATIONS AND CONCLUSION

Recommendations

The findings indicate that affordable housing can support inclusive urban growth when governance, infrastructure, finance, design, and regional planning systems are deliberately coordinated. The following stakeholder-specific recommendations are proposed with measurable implementation indicators.

Governments should establish integrated metropolitan and regional housing frameworks that coordinate land administration, transport planning, infrastructure provision, environmental management, and housing delivery. Within three to five years, planning authorities should target at least 30% reduction in development approval timelines through digital approval platforms, integrated land information systems, and one-stop housing-permit processes. Governance indicators should include reduced expansion of informal settlements, increased supply of serviced land, improved public transport accessibility, and measurable growth in affordable housing units delivered within planned urban corridors.

Urban and regional planners should strengthen land-use systems that connect affordable housing to transport corridors, employment centres, healthcare facilities, schools, drainage networks, water systems, and environmental protection zones. Within five-year regional plans, planning agencies should establish minimum infrastructure-access benchmarks, including walkable access to public transport, potable water, drainage, electricity, and social infrastructure in affordable housing layouts. GIS-based growth monitoring should also be institutionalised to track spatial expansion, infrastructure deficits, and regional inequality.

Architects should prioritise climate-responsive and resource-efficient housing through passive design, modular construction, local materials, compact spatial layouts, and low-carbon building systems. Design indicators should include measurable reductions in operational energy demand, embodied carbon, land consumption, and life-cycle maintenance burdens. Architectural practice should also strengthen collaboration with planners, engineers, and environmental specialists from project inception to ensure affordability without compromising liveability, resilience, or environmental performance.

Financial institutions should expand access to affordable housing finance through flexible mortgage products, cooperative housing finance, rent-to-own schemes, green housing loans, and infrastructure-backed financing. Within three to five years, financial institutions should set measurable targets to increase access to low- and middle-income mortgages, reduce down-payment barriers, and support climate-responsive housing projects through preferential lending terms.

Development agencies and international organisations should provide technical assistance, support for infrastructure investment, governance capacity programmes, and climate resilience financing for rapidly urbanising developing economies. Their interventions should include measurable indicators for spatial equity, carbon reduction, serviced land delivery, and inclusive access to housing, transport, and infrastructure.

CONCLUSION

This study examined affordable housing as a strategic instrument for sustainable regional development and inclusive urban growth through a PRISMA-based systematic review of 55 peer-reviewed journal articles published between 2016 and 2026. The review synthesised evidence on governance coordination, infrastructure integration, environmental sustainability, spatial planning, and housing affordability systems.

The study shows that affordable housing has policy significance beyond shelter provision. When aligned with governance systems, infrastructure networks, compact development, and transit-oriented planning, it can strengthen territorial cohesion, labour mobility, environmental resilience, and regional productivity. Conversely, fragmented governance, weak land administration, infrastructure deficits, and uncontrolled urban expansion continue to limit the developmental value of housing, especially in rapidly urbanising developing economies.

The study contributes a systems-oriented framework that connects architecture, urban and regional planning, governance, infrastructure, and environmental management. Methodologically, it demonstrates how PRISMA-based review procedures can be combined with thematic synthesis, quantitative meta-pattern analysis, and inferential validation to support interdisciplinary urban research.

Globally, the findings reposition affordable housing as a spatial development strategy rather than a narrow welfare intervention. Its wider relevance lies in showing that inclusive urban growth and sustainable regional transformation require coordinated housing, infrastructure, governance, and environmental systems operating within a shared planning framework.

Contribution to Knowledge

Empirical Synthesis: The study consolidates review-based evidence showing how affordable housing relates to governance coordination, infrastructure integration, environmental sustainability, spatial equity, and regional productivity across developed and developing contexts.

Conceptual Contribution: The study proposes an integrated framework that combines Sustainable Urbanism Theory, Smart Growth Theory, and Socio-Technical Systems Theory to interpret affordable housing as a regional development mechanism shaped by governance, infrastructure, environmental, and spatial systems.

Methodological Contribution: The study demonstrates the usefulness of combining PRISMA-based systematic review procedures with thematic synthesis, Weighted Frequency Index analysis, chi-square validation, regression modelling, and quantitative meta-pattern interpretation. These procedures are based on aggregated review evidence rather than primary empirical measurement.

Practical Contribution: The study offers a policy-oriented framework to guide governments, planners, architects, financial institutions, and development agencies in coordinating housing delivery with infrastructure planning, governance reform, climate responsiveness, and regional development priorities.

Suggestions for Further Studies

Future studies should empirically validate the proposed framework using primary data from households, planning agencies, developers, and regional authorities across different metropolitan and peri-urban contexts. Such studies would address the present review's limitation of relying on coded secondary evidence.

Longitudinal and GIS-based studies are also needed to track how affordable housing affects spatial transformation, transport accessibility, infrastructure distribution, land consumption, and regional productivity over time. Comparative studies between developed and developing economies would clarify how governance capacity, finance systems, and planning institutions shape housing outcomes in different contexts.

Further research should examine carbon accounting in affordable housing, including embodied carbon, operational energy demand, material choices, and climate-resilience performance across compact, transit-oriented, and peri-urban growth models. AI-assisted planning analytics and digital urban modelling may also improve predictive assessment of housing demand, infrastructure needs, and regional sustainability outcomes.

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